REMARKS

Reexamination and reconsideration of the rejections are hereby requested.

Claims 1-40 are pending in this application and claims 1-9 and 14-40 have been withdrawn from consideration as being drawn to a non-elected invention. Claims 10-13 stand rejected.

At the outset, one of the inventors, Professor Jack Howard, and the undersigned attorney wish to thank examiner McCracken for according them a telephone interview to discuss the invention and cited prior art. During the interview, the undersigned attorney indicated that claim 10 would be amended to make it clear that a fullerenic structure is chemically bonded to a surface of a bulk carbon material. Claim 10 has been so amended. Professor Howard explained that the claims at issue are directed to fullerenic structures chemically bonded to the surface of a bulk carbon material. He explained that when the specification stated that fullerenes are difficult to detect and characterize because they are "often very strongly bound to, or within, the material with which they are condensed," it refers to a physical, rather than a chemical, bond. In particular, Professor Howard explained that physical bonding arises from van der Waals forces that do not constitute chemical bonding. Professor Howard further explained how he was able to achieve a true chemical bond between a fullerenic structure and the surface of bulk carbon material. The specification at page 11 line 5 was pointed out to the examiner as providing support for the "bulk" language in amended claim 10.

The prior art references were next discussed. It was pointed out that the carbon materials disclosed in the laid-open Japanese publication number 11-140342 and the Schwob reference, US Patent No. 6,358,375, did not constitute the chemical bonding of a fullerene to a carbon material but were merely fullerenes physically bound to carbon.

Next, US Patent No. 5,132,105 to Remo was discussed. Professor Howard noted that in Remo, fullerenes are used as feedstock for making diamond like materials and pointed out that the structure shown in Remo Fig. 4 would be highly unstable and might not actually exist. It was also pointed out that Remo himself states that the fullerenic structure "may begin to unwind and break up" as the diamond like materials form. In any event it was noted that Remo does not teach or suggest chemically bonding a fullerene to the surface of a bulk carbon material. As to the Taylor *et al.* reference, it was pointed out that the polymerization of fullerenes shown in Box

1 of Taylor did not teach chemical bonding of fullerenes to the surface of a bulk carbon material as claimed.

During the interview, the examiner kindly brought to our attention a new reference by Donnet *et al.* relating to fullerenic carbon in carbon black furnaces. Professor Howard indicated that he would study the Donnet reference carefully once the interview concluded. The examiner particularly pointed out figure 2 in Donnet as suggesting that fullerenes are chemically bonded to carbon material. A careful review of Donnet suggests that the fullerenes are physically bound to the carbon structures rather than being chemically bound, as is the situation with Schwob and the Japanese laid-open application.

It was pointed out to the examiner that the subject matter of the present application was published in the journal Carbon in 2004 that had published the Donnet reference in 2000. Professor Howard indicated that had Donnet established chemical bonding then Howard's subsequent paper would not have been published.

The undersigned attorney emphasized that the point of novelty of the present invention is the chemical, rather than physical, bonding of fullerenic structures to bulk carbon material. The examiner indicated that if it were established that the prior art did not disclose chemical bonding that the present application "may" be allowable.

The examiner indicated that evidence supporting a conclusion that the prior art contemplated physical, rather than chemical, bonding might advance prosecution. Included herewith is a declaration of Professor Howard in which he concludes that he would not expect chemical bonds to have formed in the prior art references.

To summarize, Schwob, Japanese laid-open application, and Donnet teach fullerenic structures physically bound to carbon materials. Remo does not teach a fullerene chemically bonded to a bulk carbon material. The Taylor reference shows two fullerenes chemically bonded to one another but does not disclose a fullerene chemically bonded to the surface of a bulk carbon material.

It is submitted that the enclosed Howard declaration provides sufficient evidence to establish that the prior art references, including the Donnet reference, showed physical, not chemical, bonding of fullerenes to a surface of bulk carbon materials. The examiner expressed concern about the scope of claim 10. The undersigned attorney assured the examiner that the record would make clear that claim 10 would not cover a material that did not include chemical

bonding of a fullerene to the surface of a bulk carbon material and that the file wrapper would make that explicit.

For the foregoing reasons, including the provided evidence, it is submitted that claims 10-13 are free of the prior art and therefore allowable. Early favorable action is requested.

Respectfully submitted,
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